

TAN-8550

USA Model



STEREO POWER AMPLIFIER

SPECIFICATIONS

GENERAL

System: Phase-linear dc stereo amplifier in direct-coupling V-FET pure-complementary symmetry circuit

Power requirements: 120 V ac, 60 Hz

Power consumption: 260 W

AC outlet: 1 unswitched, 200 W

Dimensions: 440 (w) x 170 (h) x 410 (d) mm
17 $\frac{3}{8}$ (w) x 6 $\frac{3}{4}$ (h) x 16 $\frac{1}{8}$ (d) inches

Weight: 19 kg (41 lb 14 oz), net
23 kg (50 lb 11 oz), in shipping carton

Power bandwidth: 5 Hz ~ 50 kHz (IHF)

Harmonic distortion: 0.1 % at rated output
0.05 % at 1 W output

IM distortion: 0.1 % at rated output
(60 Hz : 7 kHz = 4 : 1) 0.05 % at 1 W output

Damping factor: 200 (8 Ω , at 1 kHz, at SPEAKER DIRECT terminal)

Residual noise: 0.01 μ W

Frequency response: 20 Hz ~ 100 kHz $\frac{+0}{-3}$ dB (NORMAL)
DC ~ 100 kHz $\frac{+0}{-1}$ dB (TEST)

Inputs: Sensitivity 1.0 V RMS (for rated output)
Impedance: 50 k Ω

POWER AMPLIFIER SECTION

Continuous RMS power output: 110 W + 110 W/8 Ω
(rated output) 110 W + 110 W/4 Ω
(less than 0.1 % THD) at 1 kHz, both channels driven simultaneously
100 W + 100 W/8 Ω
at 20 Hz ~ 20 kHz, both channels driven simultaneously

OPTICAL PEAK PROGRAM METER

Frequency response: 30 Hz ~ 30 kHz $\frac{+0}{-3}$ dB

Measuring range: 1 ~ 200 W
(METER SENSITIVITY set to "1")
0.1 ~ 20 W
(METER SENSITIVITY set to "1/10")

SONY
SERVICE MANUAL

SERVICING NOTES

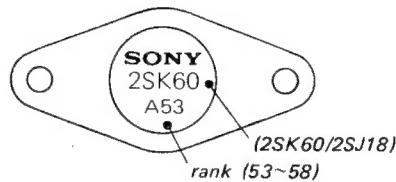
1. Apply the rated ac line voltage to the set directly. Do not increase the voltage gradually by using a variable transformer or other such instrument: this will cause a V-FET failure.

2. V-FET Replacement

TAN-8550 uses six V-FETs (2SK60...3 pcs, 2SJ18...3 pcs) in each channel of its power amplifier. Both 2SK60 and 2SJ18 are divided into six ranks according to their V_{sgo} (gate-source voltage) and V_p (cut-off voltage). The bias resistors of the V-FET differ from a rank to a rank, and it is necessary to use the same rank of V-FETs in the same channel.

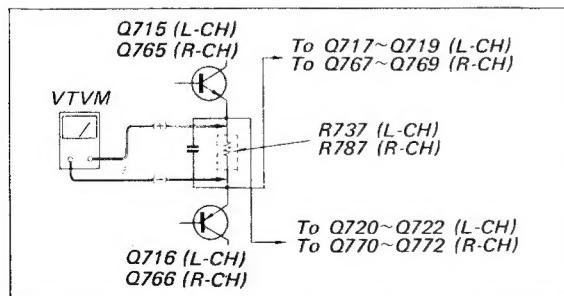
If you cannot obtain the same rank of V-FET as the one used in the repairing set, replace all six V-FETs. At the same time, replace the bias resistors according to the table given at right.

Rank of 2SK60 2SJ18	Bias Resistors	
	R725, R775	R731, R781 R732, R782
53	33 k Ω	1.8 k Ω
54	33 k Ω	1.5 k Ω
55	33 k Ω	1.2 k Ω
56	30 k Ω	1.0 k Ω
57	30 k Ω	1.0 k Ω
58	30 k Ω	820 Ω

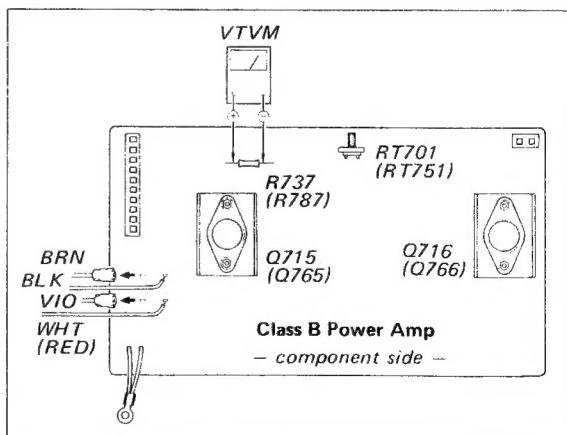


3. After the replacement of V-FET, carry out the following check to avoid further occurrence of V-FET failure.

- 1) Turn off the power of TAN-8550.
- 2) Remove the heat sink duct.
- 3) Disconnect the brown and the violet lead wires from the pins on the CLASS B POWER AMP BOARD. See the figure at bottom right.
- 4) Turn on the power and check the voltage across R737 (L-CH)/R787 (R-CH). If the reading does not agree with the value given in the table at right, try adjusting RT701 (L-CH)/RT751 (R-CH).
- 5) If adjusting RT701/RT751 still does not give correct reading, check Q713~Q716 (L-CH)/Q763~Q766 (R-CH). Failure of these transistors will cause V-FET failure.
- 6) After the check, turn off the power of the set and put back the two lead wires mentioned in step 3.

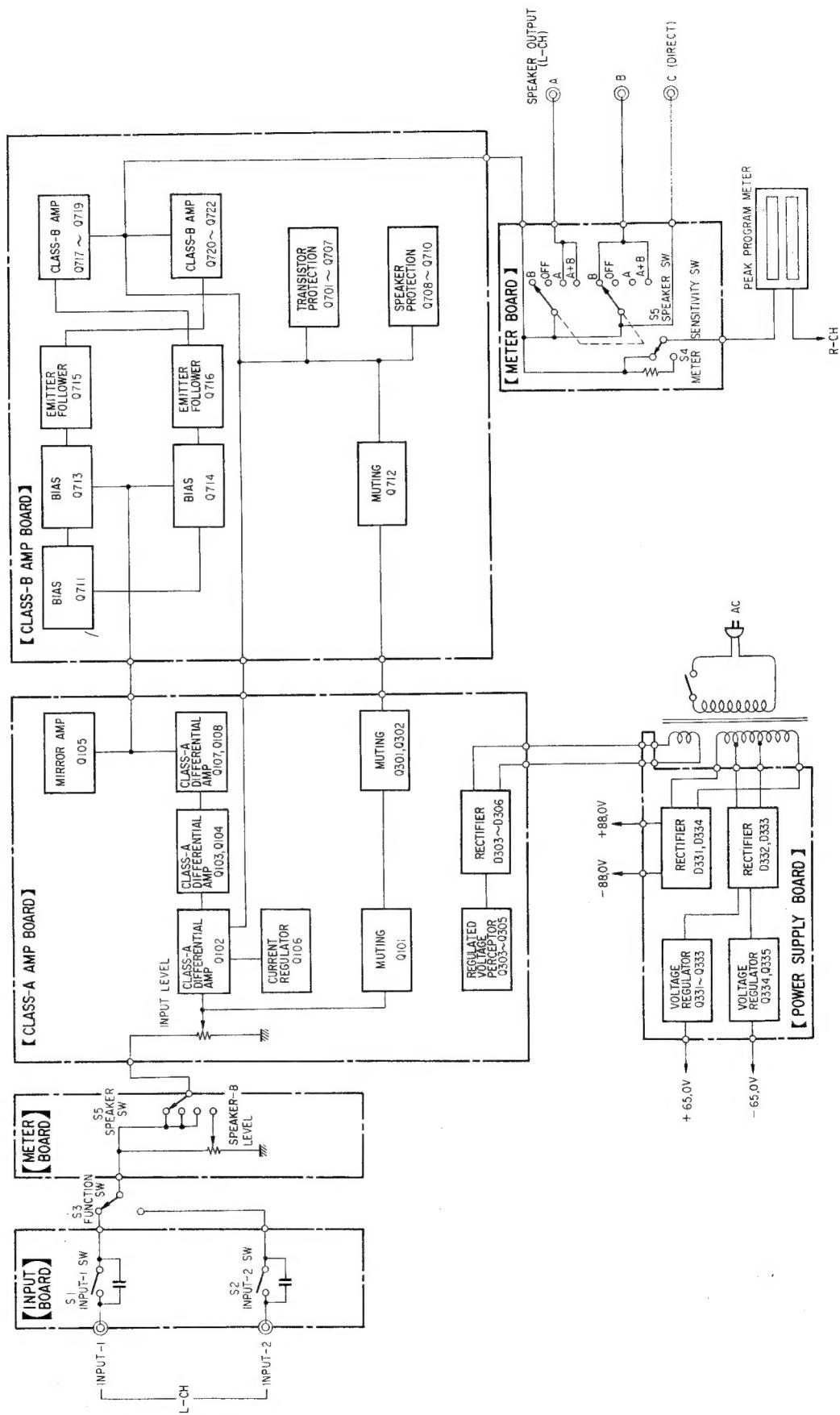


Rank of 2SK60 2SJ18 used in the set	Voltage drop across R737 (L-CH) R787 (R-CH)
53	18.8 ~ 23.8 V
54	23.8 ~ 28.8 V
55	28.8 ~ 33.8 V
56	33.8 ~ 38.8 V
57	38.8 ~ 43.8 V
58	43.8 ~ 48.8 V



SECTION 1

BLOCK DIAGRAM



SECTION 2

DISASSEMBLY AND REPLACEMENT

2-1. PANELS REMOVAL

Top Cover

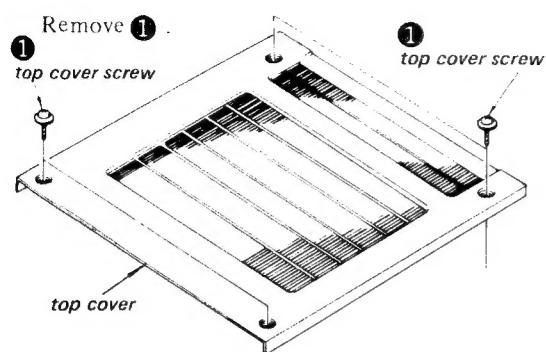


Fig. 2-1.

Wooden Side Panel

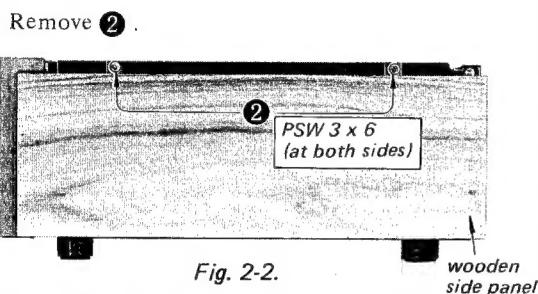


Fig. 2-2.

Front Panel

Remove 3 and 4.
 P 3 x 8, self-tapping; flange head (at both sides) 3

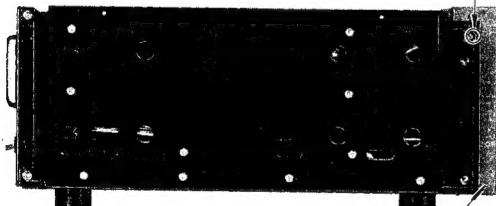


Fig. 2-3.

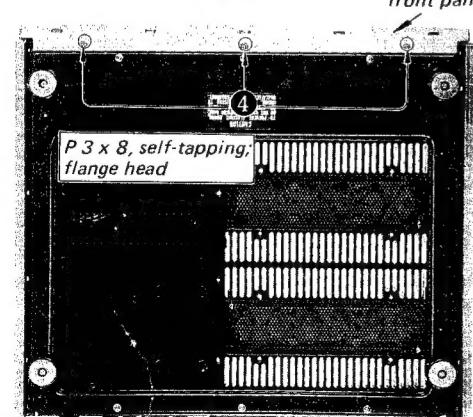


Fig. 2-4.

Peak Program Meter Cover and Control Panel

Remove 5 for peak program meter cover removal.
Remove 6 for control panel removal.

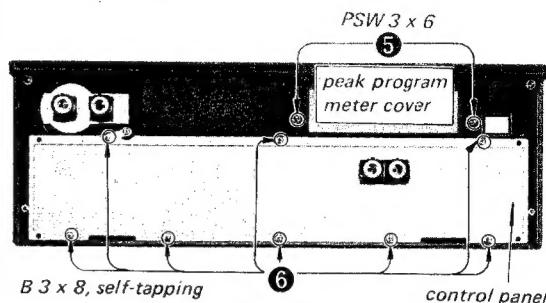


Fig. 2-5.

Front Subchassis and Rear Panel

Remove 7 and 8 for front subchassis removal.
Remove 9 and 10 for rear panel removal.

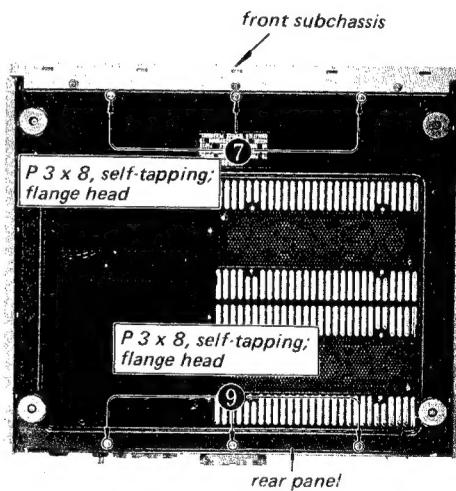


Fig. 2-6.

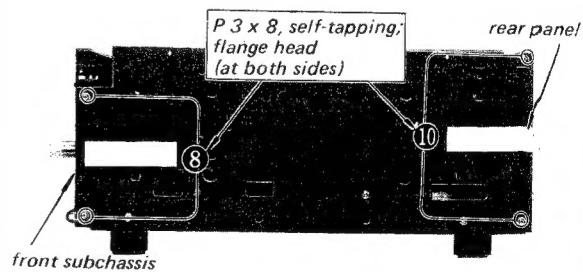


Fig. 2-7

2-2. CIRCUIT BOARD REMOVAL AND V-FET REPLACEMENT

Note: Be careful with the position and the direction of the connectors when reinstalling them to the circuit boards. See Fig. 2-8.

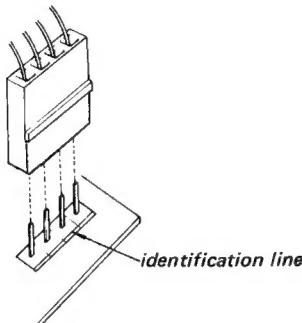


Fig. 2-8.

Class-A Amp Board and Meter Board

Remove ⑪, ⑫ for meter board removal.
Remove ⑬ for class-A amp board removal.

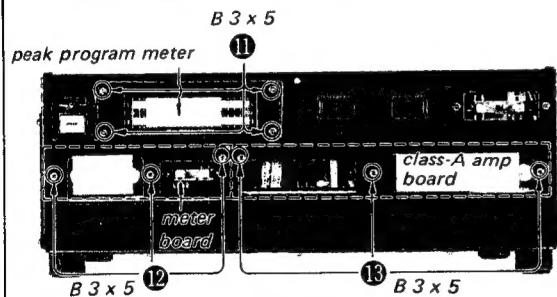


Fig. 2-9.

Input Board

Remove ⑭ and ⑮

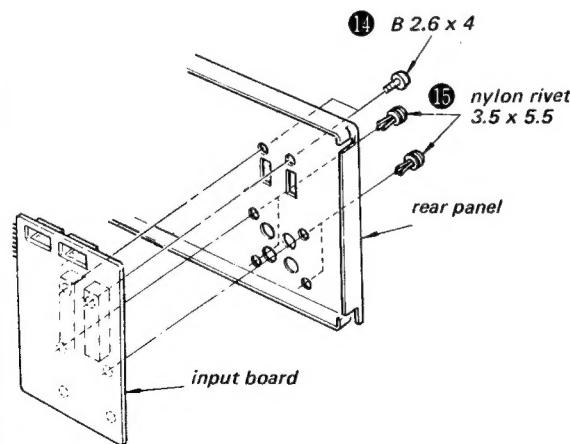


Fig. 2-10.

Class-B Amp Board

Take out the heat sink duct by removing ⑯.

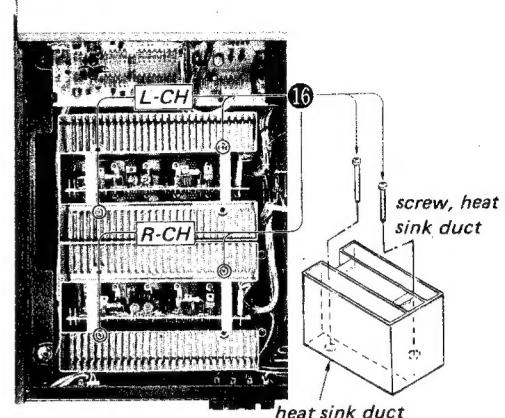


Fig. 2-11.

Remove ⑯ and take out the class-B amp board along with the heat sink.

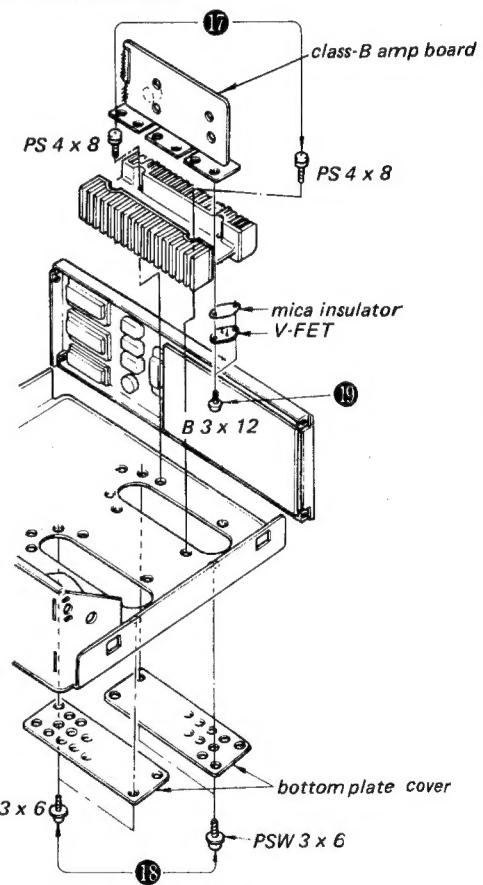


Fig. 2-12.

V-FET Replacement

Remove ⑰ and ⑲.

Note: When replacing V-FET, refer to page 2.

SECTION 3
ADJUSTMENTS

Note: Allow about five minutes for warm-up.

3.1. LAMP VOLTAGE ADJUSTMENT

Class-A Amp Board

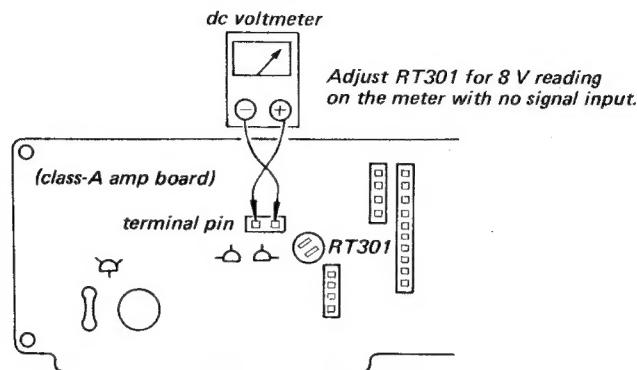


Fig. 3-1.

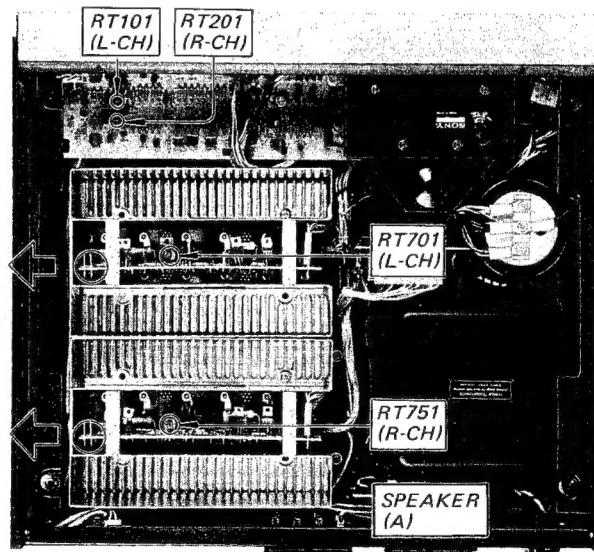
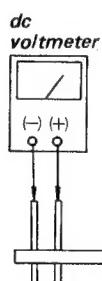
3.2. DC BALANCE AND BIAS ADJUSTMENT

Note: 1. Apply the rated ac line voltage to the set directly. Do not increase the voltage gradually by using a variable transformer or other such instruments: this will cause a V-FET failure.

2. Alternately repeat the two adjustments two or three times.

DC Bias Adjustment

Adjust RT701 (L-CH) and RT751 (R-CH) for 125 mV dc with no signal input.

**DC Balance Adjustment**

Adjust RT101 (L-CH) and RT201 (R-CH) for 0 V dc with no signal input.

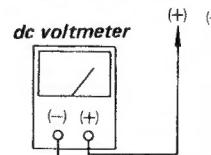


Fig. 3-2.

3-3. PEAK PROGRAM METER ADJUSTMENT AND CHECK

Test Setup:

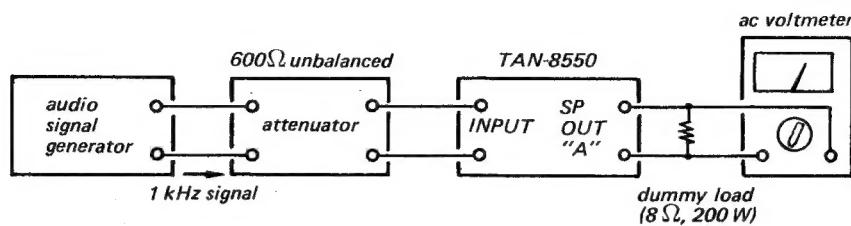


Fig. 3-3.

Procedure:

1. Adjust the attenuator for 28.3 V (100 W) reading on the ac voltmeter.
2. Set the METER SENSITIVITY switch to "x1", and adjust RT181 (L-CH) and RT281 (R-CH) (See Fig. 3-4) for 100 W reading on the peak program meter.
3. Check the following items:

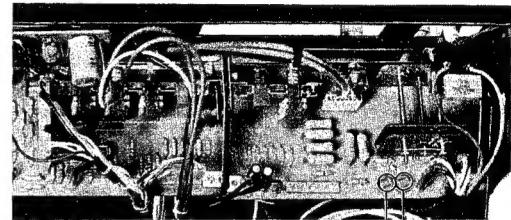
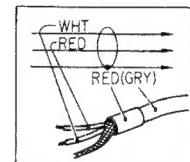
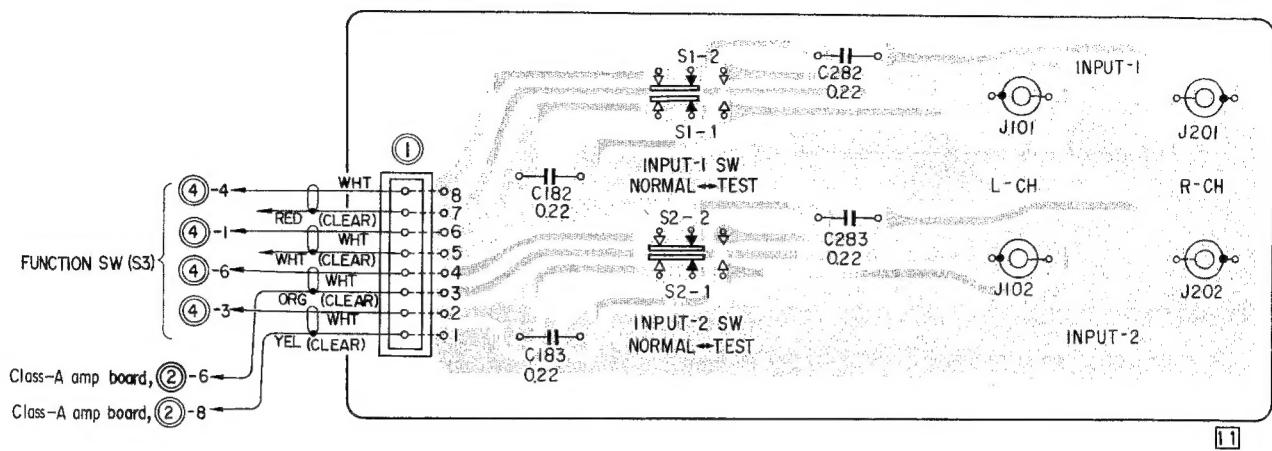
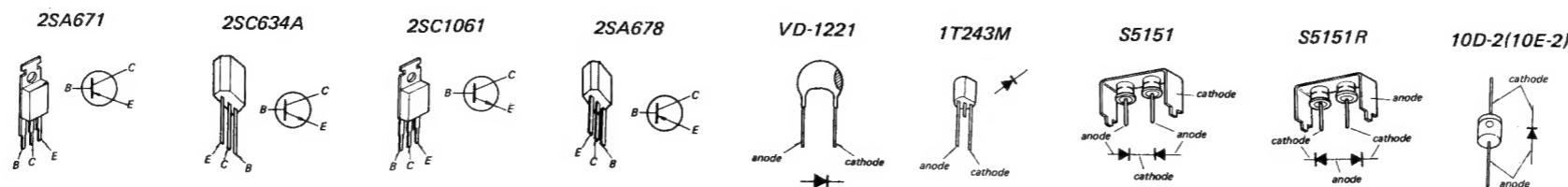
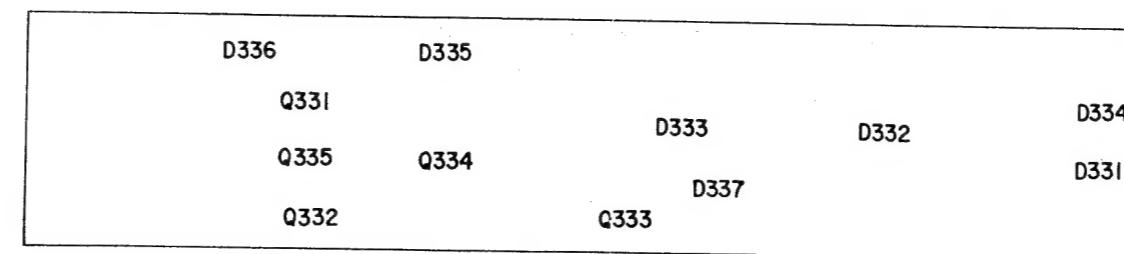
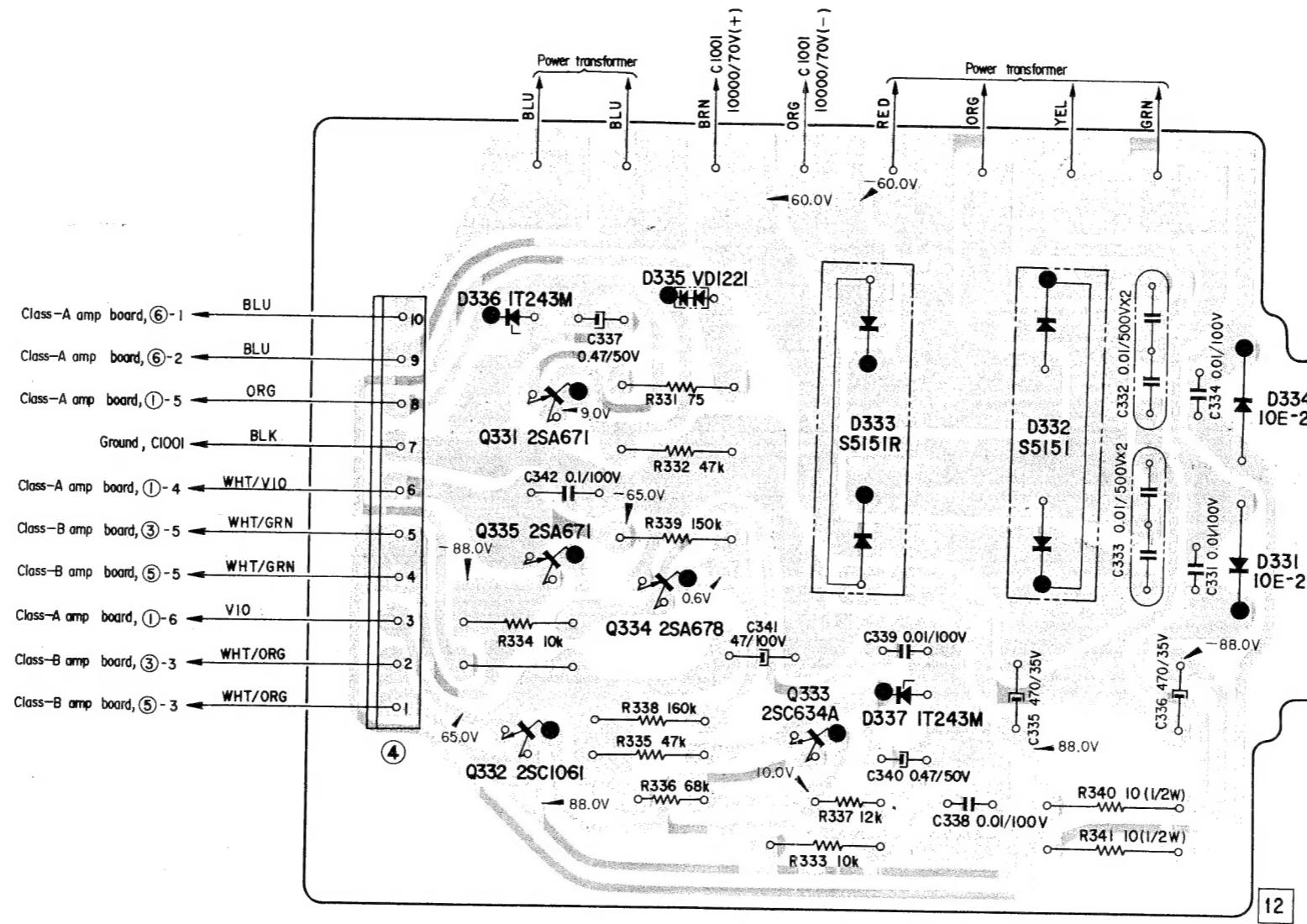


Fig. 3-4. RT181 (L-CH) RT281 (R-CH)

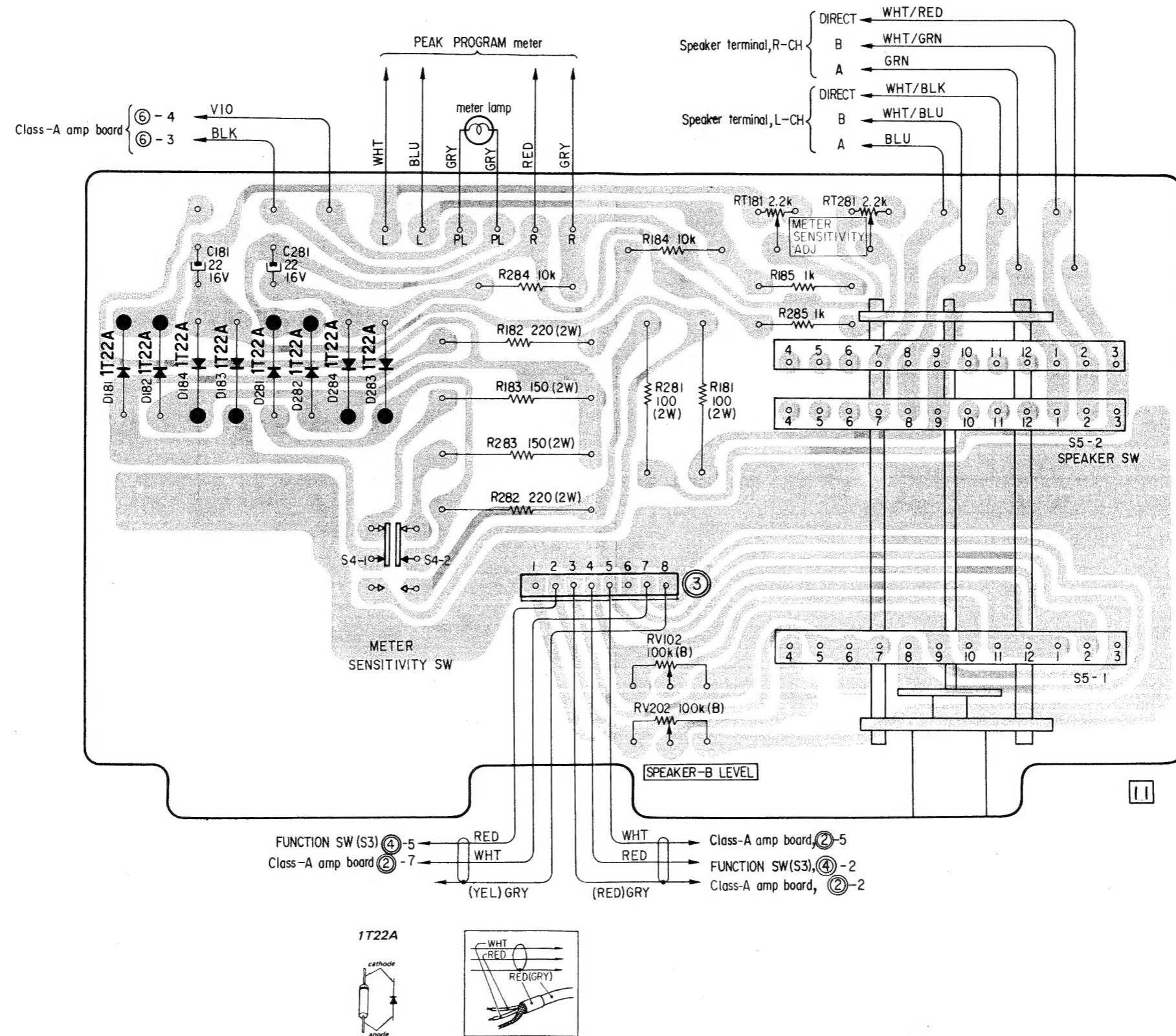
Step	Attenuator Setting	METER SENSITIVITY Switch Setting	PEAK PROGRAM METER Indication
3-1	Decrease 10 dB from step 2.	x1	10 W
3-2	Same as step 3-1	x1/10	100 W
3-3	Decrease 10 dB from step 3-2.	x1/10	10 W
3-4	Same as step 3-3	x1	1 W

SECTION 4**DIAGRAMS****4-1. MOUNTING DIAGRAM – Input Board –***– Conductor Side –*

4-2. MOUNTING DIAGRAM -- Power Supply Board --
Conductor Side --

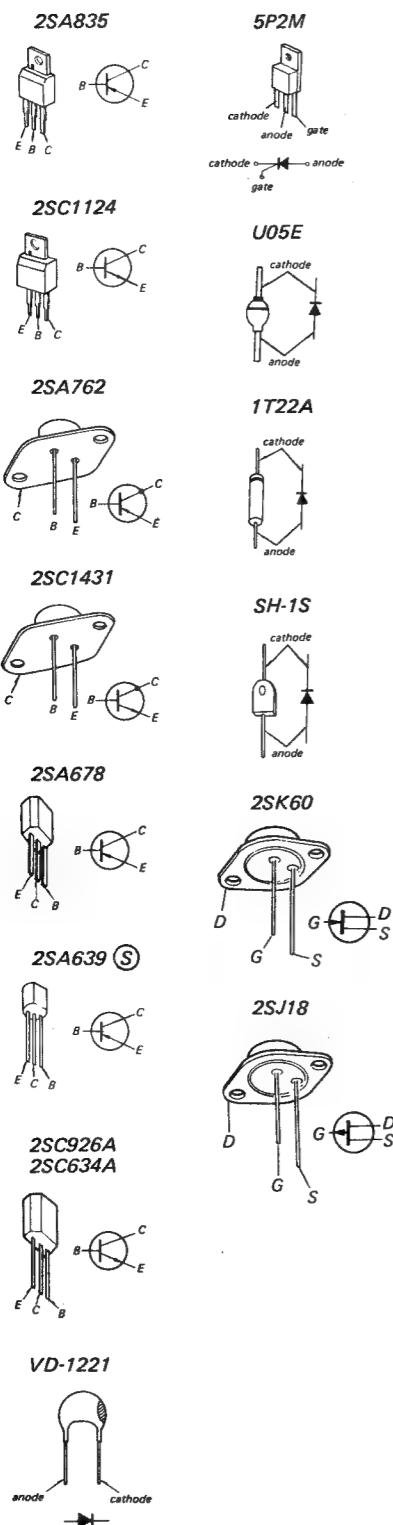


4-3. MOUNTING DIAGRAM – Meter Board –
Conductor Side



4-4. MOUNTING DIAGRAM – Class-B Power Amplifier Board –

— Conductor Side —



L-CH

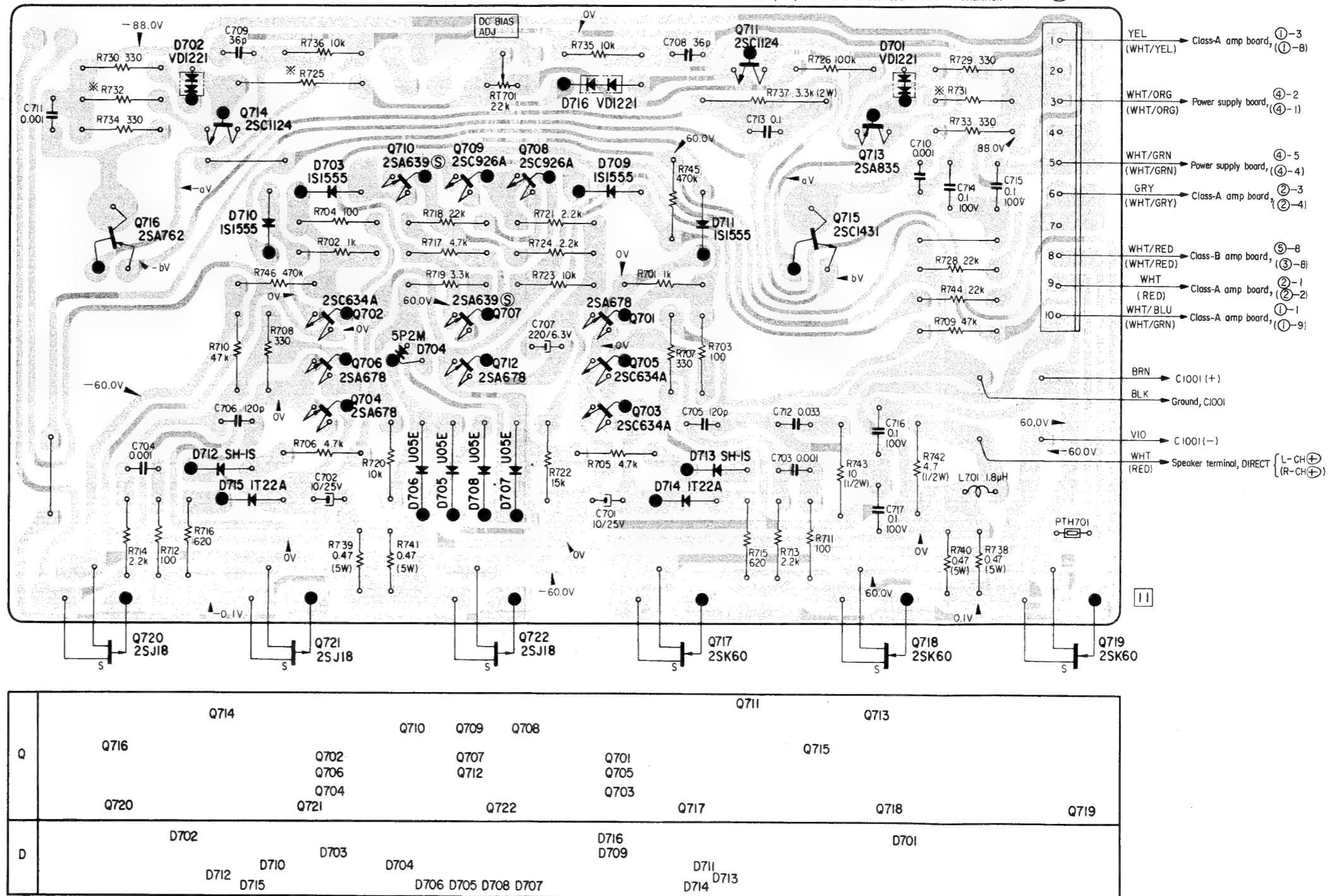
Note: R-CH is the same as L-C

The reference numbers in R-channel start from 750.

Q717~Q722	※R725,775	※R 731,732 781,782	a	b
2SK60 2SJ18 } 53	33k	1.8k	10.0V ~ 12.5V	9.4V ~ 11.9
" - 54	33k	1.5k	12.5V ~ 15.0V	11.9V ~ 14.4
" - 55	33k	1.2k	15.0V ~ 17.5V	14.4V ~ 16.5
" - 56	30k	1k	17.5V ~ 20.0V	16.9V ~ 19.4
" - 57	30k	1k	20.0V ~ 22.5V	19.4V ~ 21.9
" - 58	30k	820	22.5V ~ 25.0V	21.9V ~ 25.0

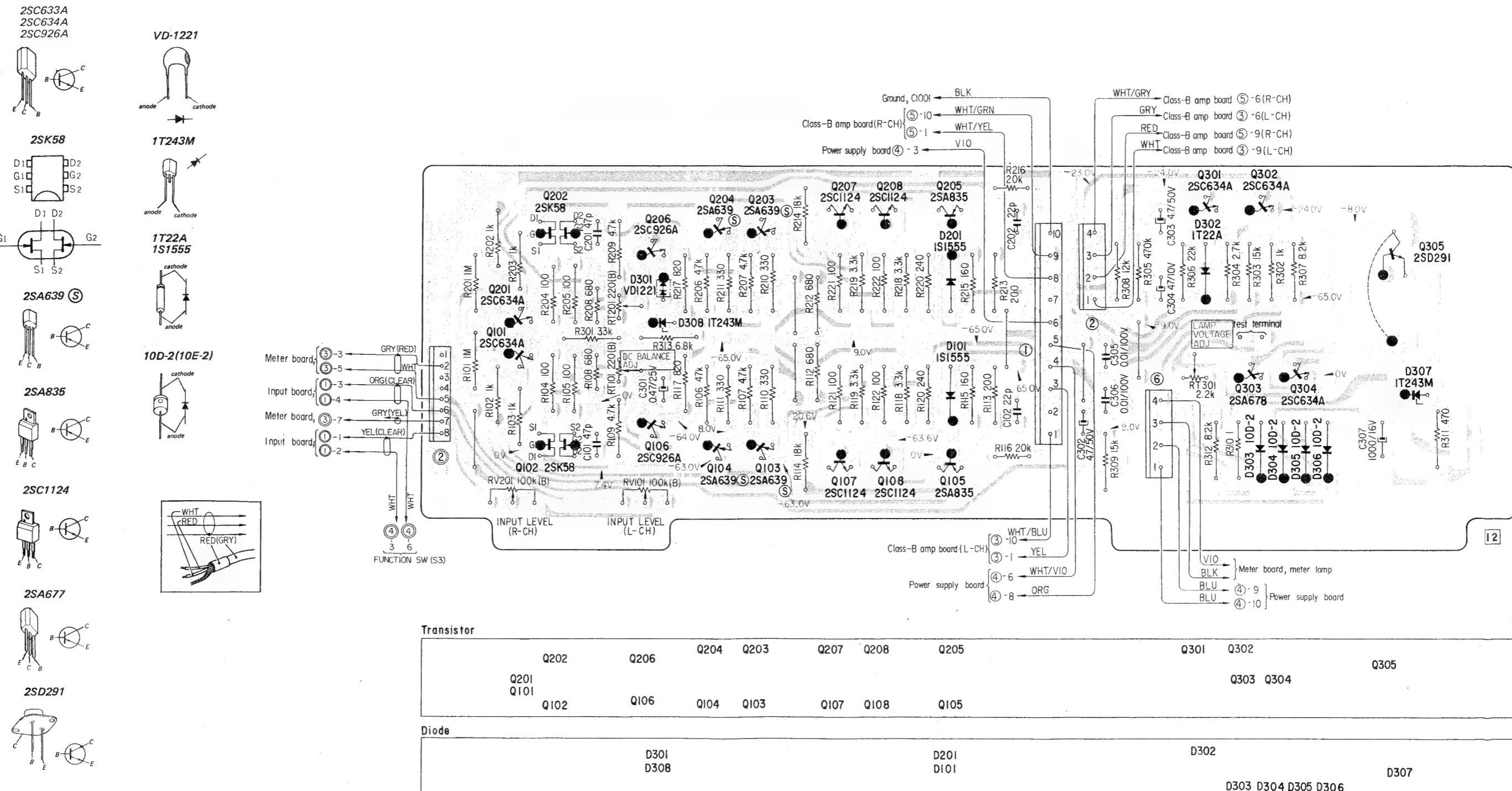
Note: () mark shows the lead wire of R channel.

L-CH (3)
R-CH (5)



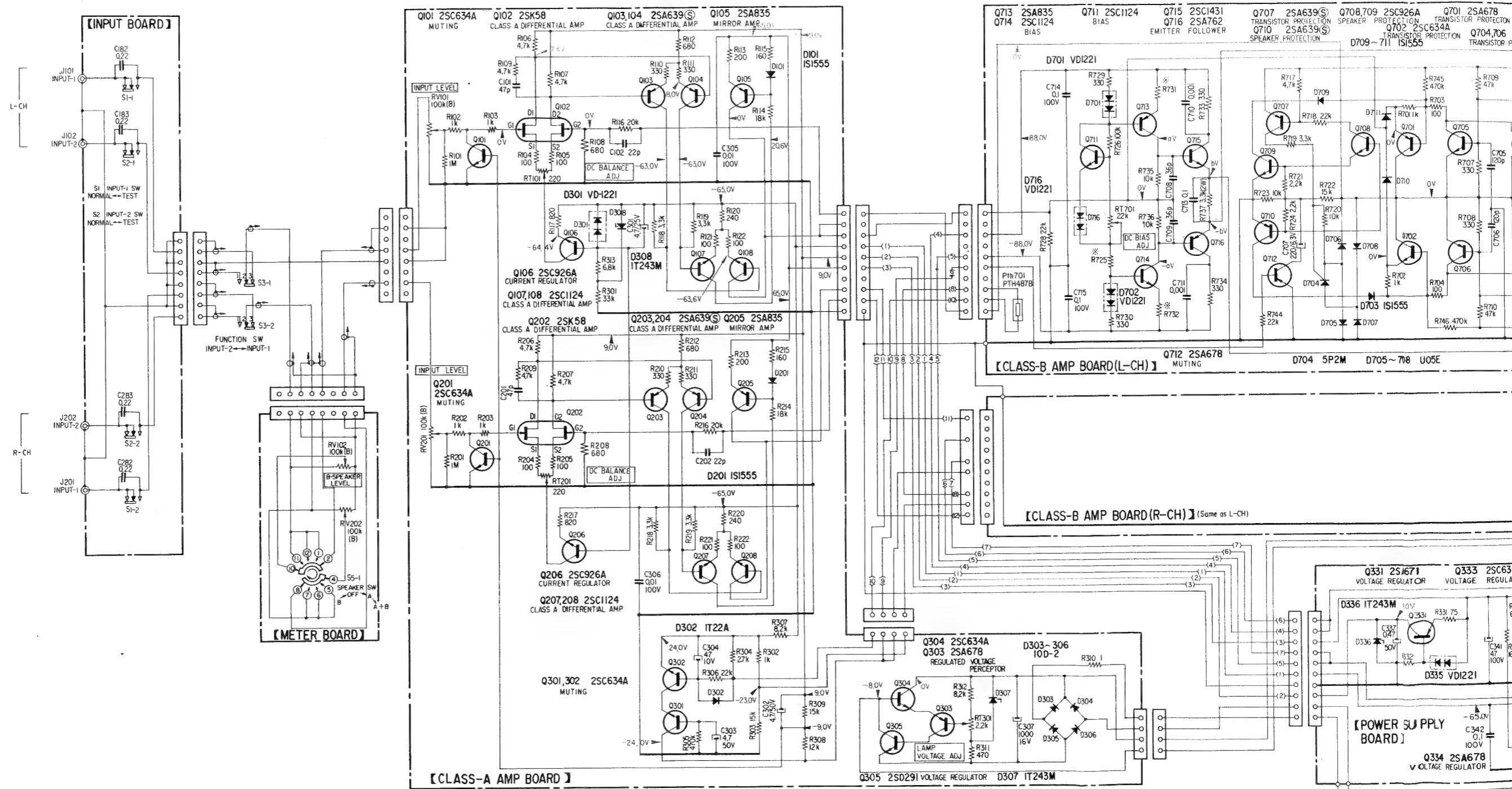
TAN-8550 TAN-8550

4-5. MOUNTING DIAGRAM – Class-A Power Amplifier Board – – Conductor Side –

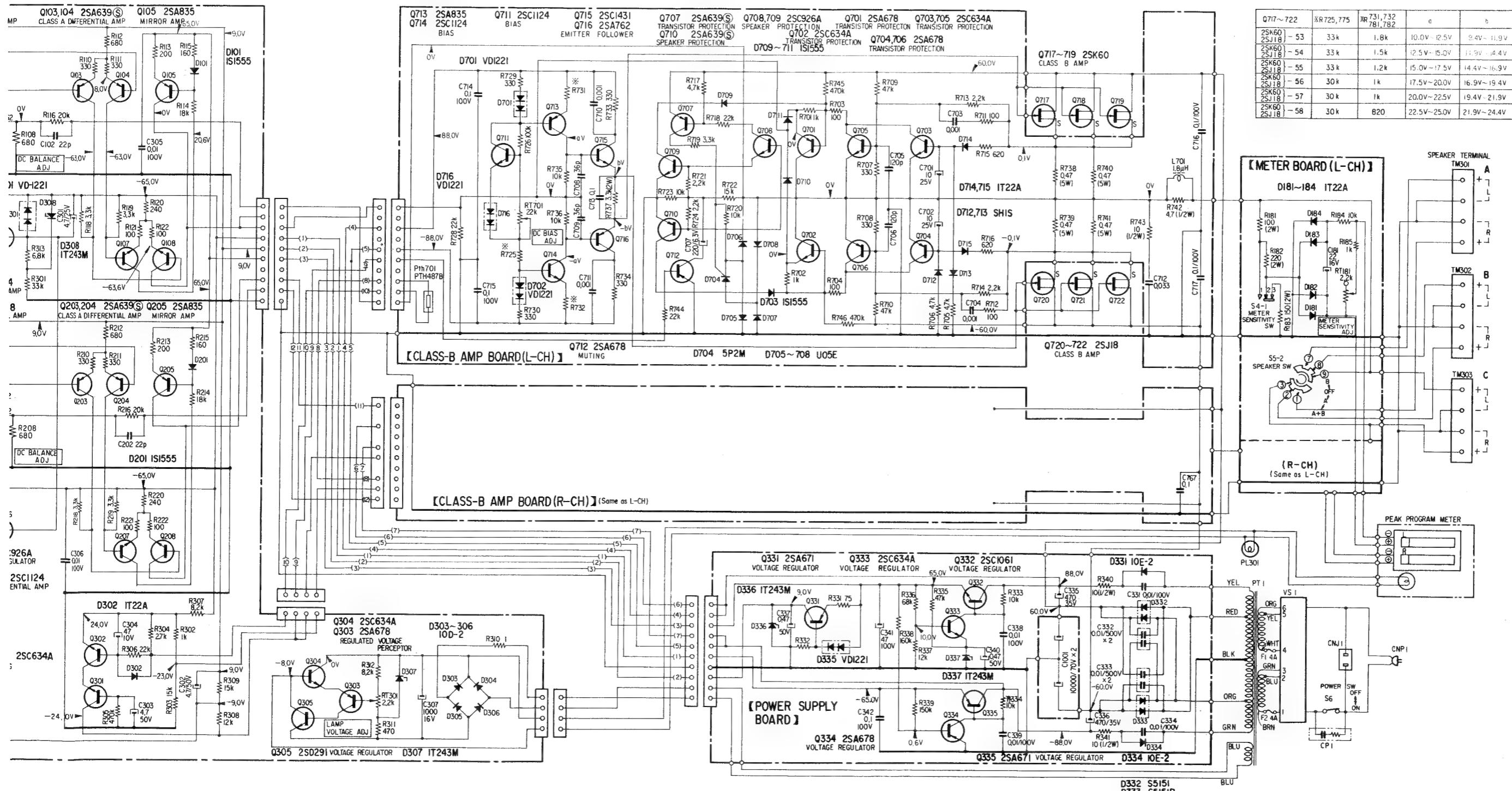


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4-6. SCHEMATIC DIAGRAM



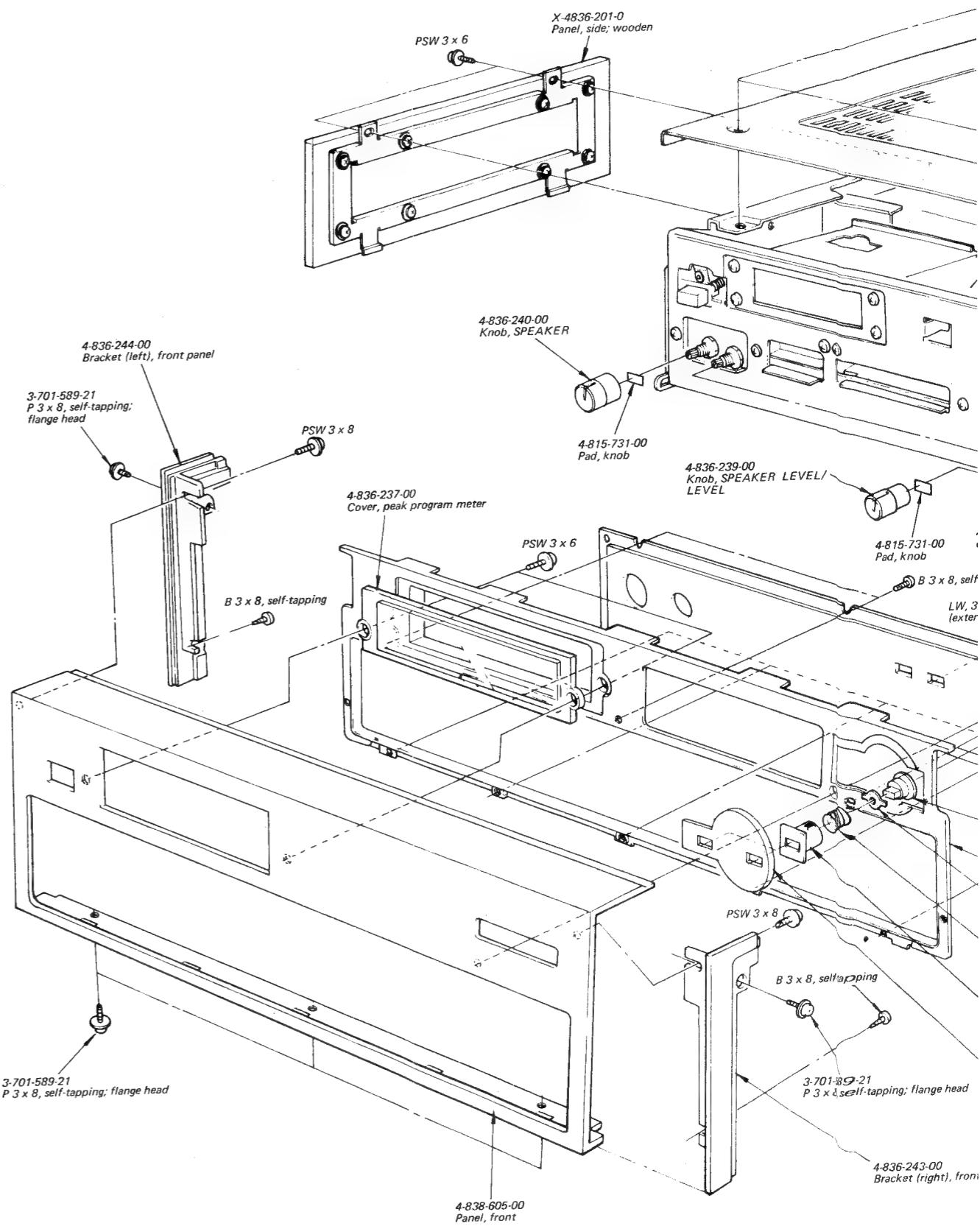
<u>Ref. No.</u>	<u>Description</u>	<u>Position</u>
S1	INPUT-1	NORMAL
S2	INPUT-2	NORMAL
S3	FUNCTION	INPUT-1
S4	METER SENSITIVITY	x1
S5	SPEAKER	B
S6	POWER	ON



SECTION 5
EXPLODED VIEWS

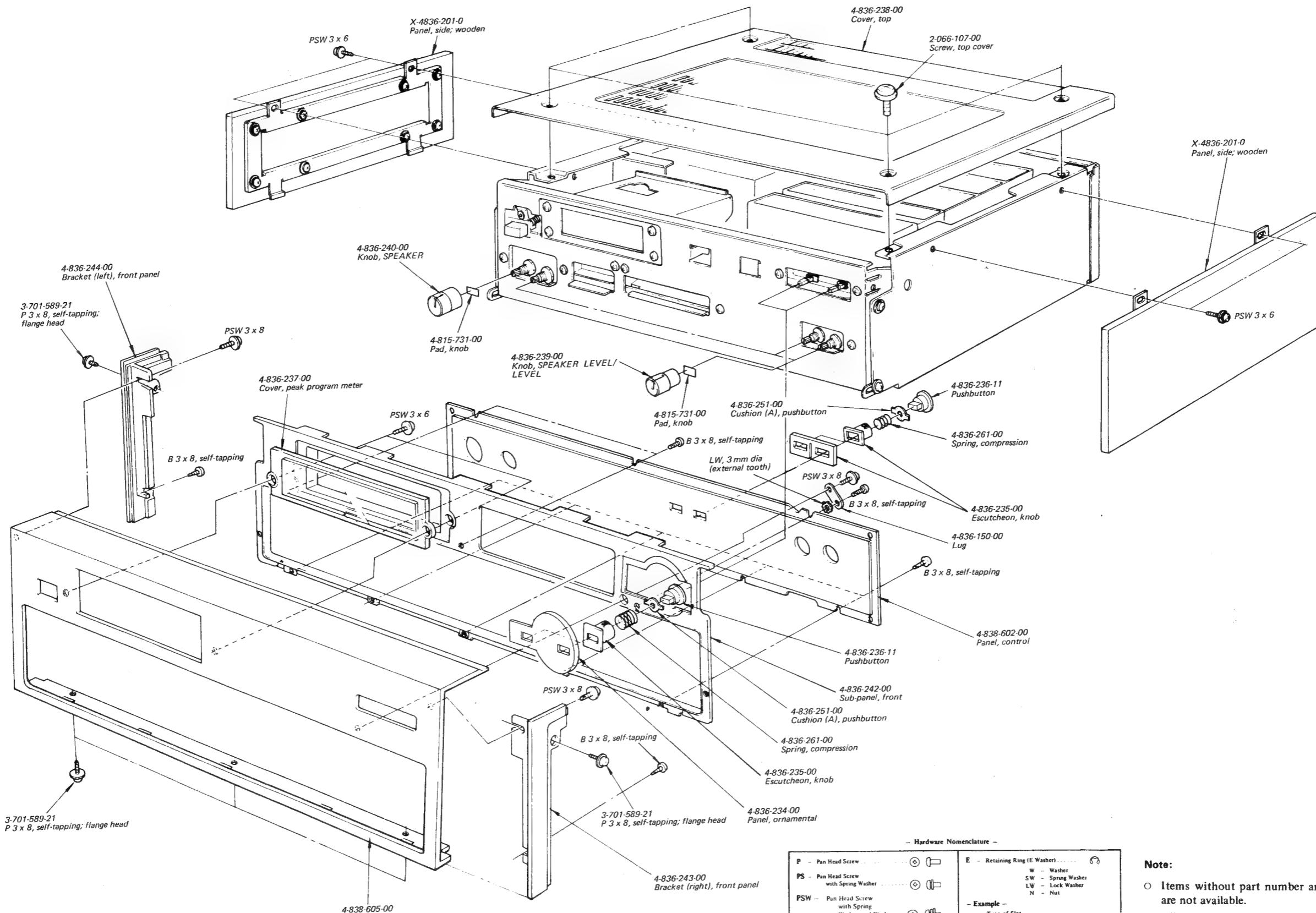
MEMO

(1)



SECTION 5
EXPLODED VIEWS

(1)



— Hardware Nomenclature —

P - Pan Head Screw	E - Retaining Ring (E Washer)
PS - Pan Head Screw with Spring Washer	W - Washer
PSW - Pan Head Screw with Spring Washer and Washer	SW - Spring Washer
B - Binding Head Screw	LW - Lock Washer
SC - Set Screw	N - Nut

— Example —

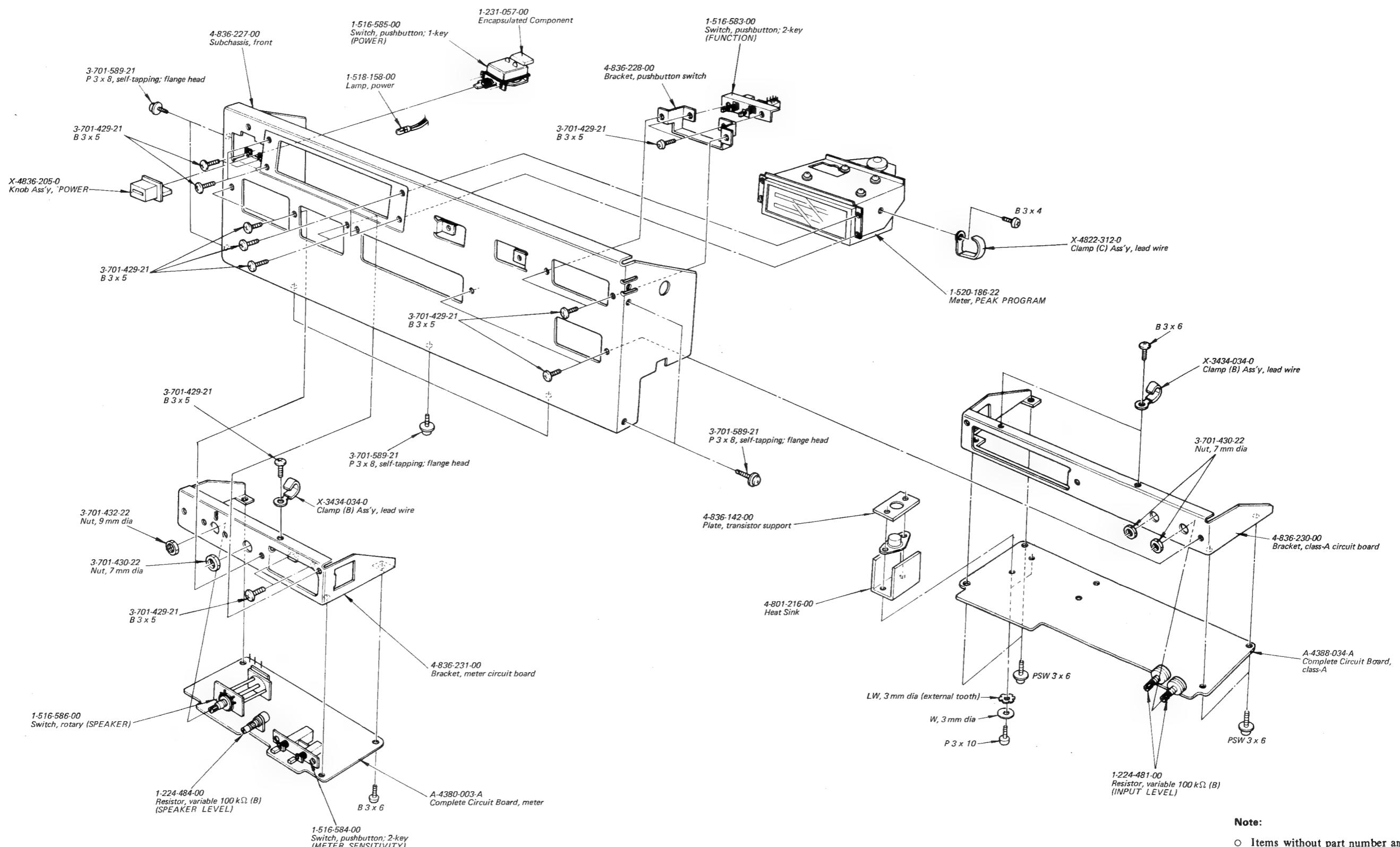
Type of Slot: \square P 3 x 10
Length in mm (L): 10
Diameter in mm (D): 3
Type of Head: \square \square

Note:

- Items without part number and description are not available.
- All screws are Phillips (cross recess) type unless otherwise noted.
(-) = slotted head

TAN-8550 **TAN-8550**

(2)

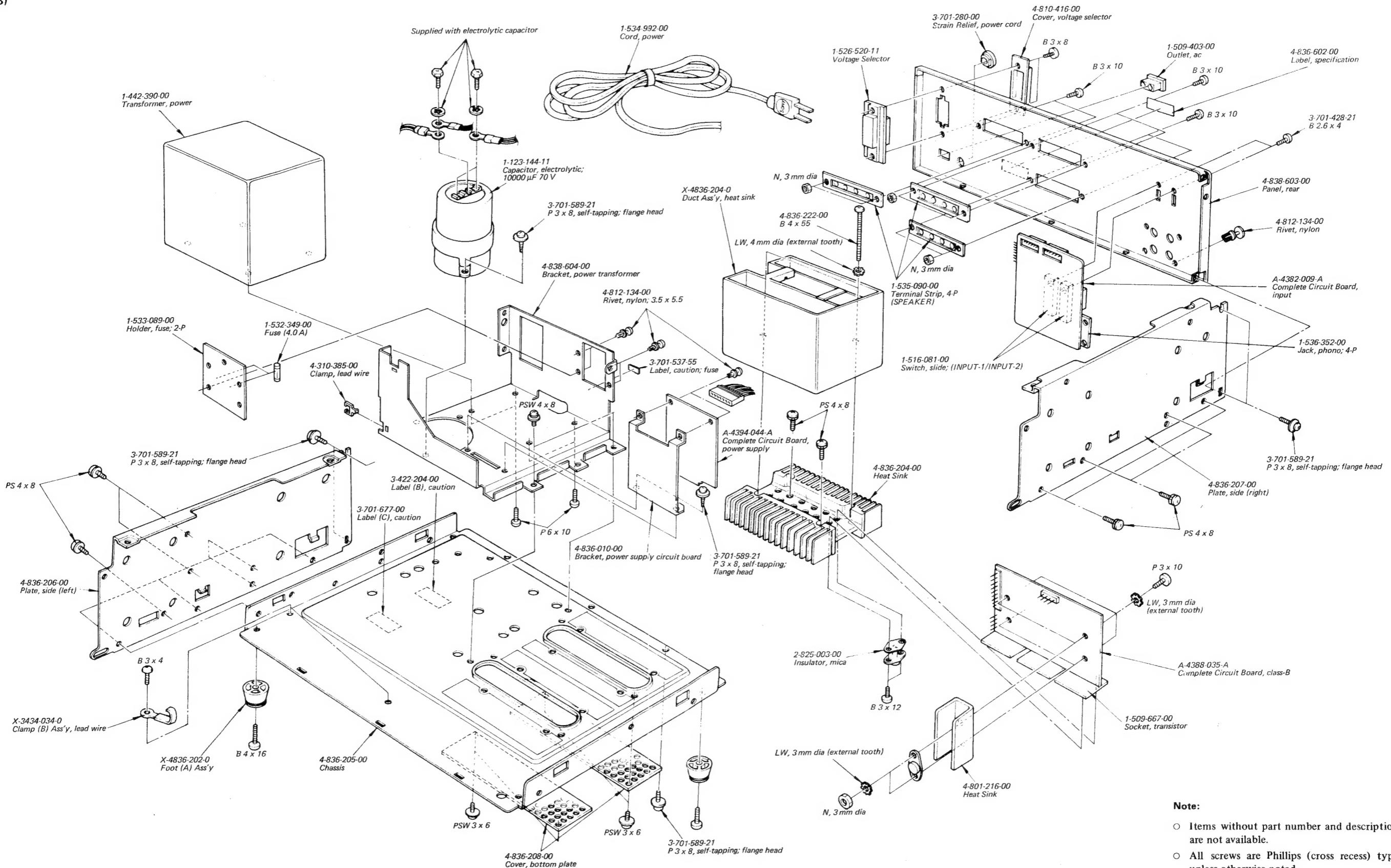


Note:

- Items without part number and description are not available.
- All screws are Phillips (cross recess) type unless otherwise noted.
(-) = slotted head

TAN-8550 **TAN-8550**

(3)



Note:

- Items without part number and description are not available.
- All screws are Phillips (cross recess) type unless otherwise noted.
(-) = slotted head

SECTION 6
ELECTRICAL PARTS LIST

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>			
COMPLETE CIRCUIT BOARDS								
A-4380-003-A	Meter		Q713(Q763)	2SA835				
A-4382-009-A	Input		Q714(Q764)	2SC1124				
A-4388-034-A	Class A amp		Q715(Q765)	2SC1431				
A-4388-035-A	Class B amp		Q716(Q766)	2SA762				
A-4394-044-A	Power Supply		Q717(Q767)	2SK60 (FET)				
SEMICONDUCTORS								
Transistors								
Q101(Q201)	2SC634A		Q718(Q768)	2SK60 (FET)				
Q102(Q202)	2SK58 (FET)		Q719(Q769)	2SK60 (FET)				
Q103(Q203)	2SA639S		Q720(Q770)	2SJ18 (FET)				
Q104(Q204)	2SA639S		Q721(Q771)	2SJ18 (FET)				
Q105(Q205)	2SA835		Q722(Q772)	2SJ18 (FET)				
Q106(Q206)	2SC926A		Diodes					
Q107(Q207)	2SC1124		D101(D201)	1S1555				
Q108(Q208)	2SC1124		D181~D184 (D281~D284)	1T22A				
Q301, Q302	2SC634A		D301	VD-1221				
Q303	2SA678		D302	1T22A				
Q304	2SC634A		D303~D306	10D-2				
Q305	2SD291		D307, D308	1T243M				
Q331	2SA671		D331	10E-2				
Q332	2SC1061		D332	S5151				
Q333	2SC634A		D333	S5151R				
Q334	2SA678		D334	10E-2				
Q335	2SA671		D335	VD-1221				
Q701(Q751)	2SA678		D336, D337	1T243M				
Q702(Q752)	2SC634A		D701(D751)	VD-1221				
Q703(Q753)	2SC634A		D702(D752)	VD-1221				
Q704(Q754)	2SA678		D703(D753)	1S1555				
Q705(Q755)	2SC634A		D704(D754)	5P2M				
Q706(Q756)	2SA678		D705 ~ D708 (D755 ~ D758)	U05E				
Q707(Q757)	2SA639S		D709 ~ D711 (D759 ~ D761)	1S1555				
Q708(Q758)	2SC926A		D712(D762)	SH-1S				
Q709(Q759)	2SC926A		D713(D763)	SH-1S				
Q710(Q760)	2SA639S		D714(D764)	1T22A				
Q711(Q761)	2SC1124		D715(D765)	1T22A				
Q712(Q762)	2SA678		D716(D766)	VD-1221				

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>		
TRANSFORMER AND INDUCTORS				
L701(L751)	1-407-592-00	Microinductor, 1.8 μ H		
PT1	1-442-390-00	Transformer, power		
CAPACITORS				
<p>Capacitors here are in μF, mylar type unless otherwise noted (μ = $\mu$$\mu$, elect = electrolytic). The working voltages of 50 volts or less are omitted except for electrolytic type.</p>				
C101(C201)	1-101-880-11	47p	ceramic	
C102(C202)	1-102-959-11	22p	ceramic	
C181(C281)	1-121-990-11	22	16V	elect
C182(C282)	1-105-689-12	0.22		
C183(C283)	1-105-689-12	0.22		
C301	1-121-395-11	4.7	25V	elect
C302, C303	1-121-396-11	4.7	50V	elect
C304	1-121-352-11	47	10V	elect
C305, C306	1-108-657-12	0.01	100V	
C307	1-121-245-11	1000	16V	elect
C331	1-105-713-12	0.01	100V	
C332, C333	1-102-355-11	0.01(2 pieces)	500V	ceramic
C334	1-105-713-12	0.01	100V	
C335, C336	1-121-941-11	470	35V	elect
C337	1-121-726-11	0.47	50V	elect
C338, C339	1-105-713-12	0.01	100V	
C340	1-121-726-11	0.47	50V	elect
C341	1-123-083-11	47	100V	elect
C342	1-105-725-12	0.1	100V	
C701(C751)	1-121-398-11	10	25V	elect
C702(C752)	1-121-398-11	10	25V	elect
C703(C753)	1-105-661-12	0.001		
C704(C754)	1-105-661-12	0.001		
C705(C755)	1-102-816-11	120p		ceramic
C706(C756)	1-102-816-11	120p		ceramic
C707(C757)	1-121-419-11	220	6.3V	elect
C708(C758)	1-102-964-11	36p		ceramic
C709(C759)	1-102-964-11	36p		ceramic
C710(C760)	1-105-661-12	0.001		

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
C711(C761)	1-105-661-12	0.001
C712(C762)	1-105-679-12	0.033
C713(C763)	1-105-685-12	0.1
C714(C764)	1-105-725-12	0.1 100V
C715(C765)	1-105-725-12	0.1 100V
C716(C766)	1-105-725-12	0.1 100V
C717(C767)	1-105-725-12	0.1 100V
C1001	1-123-144-11	10000 70V elect
RESISTORS		
<p>All resistors are in Ω. $\pm 5\%$, $\frac{1}{4}$ W, carbon resistors (except special type) are omitted. Check schematic diagram for the resistance values. (k = 1000, M = 1000 k)</p>		
R108(R208)	1-212-529-11	680 $\pm 1\%$ metal-oxide
R116(R216)	1-212-685-11	20 k $\pm 1\%$ metal-oxide
R181(R281)	1-206-640-11	100 2 W metal-oxide
R182(R282)	1-206-648-11	220 2 W metal-oxide
R183(R283)	1-206-644-11	150 2 W metal-oxide
R336	1-212-698-11	68 k $\pm 1\%$ metal-oxide
R337	1-212-680-11	12 k $\pm 1\%$ metal-oxide
R340, R341	1-202-525-11	10 $\frac{1}{2}$ W composition
R725(R775)	1-206-699-11	30 k 2 W metal-oxide
R725(R775)	1-206-700-11	33 k 2 W metal-oxide
R737(R787)	1-206-676-11	3.3 k 2 W
R738(R788)	1-217-158-11	0.47 5 W wirewound
R739(R789)	1-217-158-11	0.47 5 W wirewound
R740(R790)	1-217-158-11	0.47 5 W wirewound
R741(R791)	1-217-158-11	0.47 5 W wirewound
R742(R792)	1-202-517-11	4.7 $\frac{1}{2}$ W composition
R743(R793)	1-202-525-11	10 $\frac{1}{2}$ W composition
RT101 (RT201)	1-224-550-00	220, adjustable (dc balance adj.)
RT181 (RT281)	1-224-250-00	2.2 k, adjustable (meter sens. adj.)
RT301	1-224-250-00	2.2 k, adjustable (lamp voltage adj.)

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
RT701 (RT751)	1-224-491-00	22 k, adjustable (dc bias adj.)	CNP1	1-534-992-00	Cord, power
RV101 (RV201)	1-224-481-00	100 k (B), variable (INPUT LEVEL)	CP1	1-231-057-00	Encapsulated Component
RV102 (RV202)	1-224-484-00	100 k (B), variable (SPEAKER LEVEL)	F1, F2	1-532-349-00	Fuse, 4 A
SWITCHES					
S1, S2	1-516-081-00	Slide (INPUT)	J101(J201)	1-536-352-00	Jack, phono; 4-p
S3	1-516-583-00	Pushbutton, 2-key (FUNCTION)	J102(J202)		
S4	1-516-584-00	Pushbutton, 2-key (METER SENS.)	PL301	1-518-158-00	Lamp, power
S5	1-516-586-00	Rotary (SPEAKER SELECTOR)	TM301~ TM303	1-535-090-00	Terminal Strip (SPEAKER)
S6	1-516-585-00	Pushbutton (POWER)	VS1	1-526-520-11	Selector, voltage
MISCELLANEOUS					
CNJ1	1-509-403-00	Outlet, ac		1-509-667-00	Socket, transistor
				1-520-186-22	Meter, peak program
				1-533-089-00	Holder, fuse; 2-p
				1-536-354-00	Pin, terminal
			Pth701) Pth751	1-800-340-00	Thermistor (Positive)

ACCESSORIES AND PACKING MATERIALS	
<u>Part No.</u>	<u>Description</u>
X-3701-029-0	Card Ass'y, warranty
3-701-020-00	Bag, polyethylene; instruction manual
3-701-300-00	Bag, polyethylene; unit
3-701-730-00	Bag, polyethylene; IBM card
3-701-742-00	Card, IBM
3-780-480-21	Manual, instruction
4-836-257-00	Cushion, side
4-836-258-00	Cushion, lower
4-836-259-00	Cushion
4-838-607-00	Carton